

- 1 1. A method comprising:
2 forming a phase change memory element to be read
3 with a voltage greater than or equal to the threshold
4 voltage of the element.
- 1 2. The method of claim 1 including forming a phase
2 change memory element to have a holding voltage that is at
3 least 80 percent of the threshold voltage of the element.
- 1 3. The method of claim 1 including forming a phase
2 change memory element to have a threshold voltage that does
3 not vary by more than 10 percent with programming currents
4 varying as much as two times.
- 1 4. The method of claim 1 including forming a phase
2 change memory element including a phase change material
3 between a pair of electrodes.
- 1 5. The method of claim 4 including forming a phase
2 change material with a lower electrode of titanium silicon
3 nitride.
- 1 6. An apparatus comprising:
2 a phase change memory element to be read with a
3 voltage greater than or equal to the threshold voltage of
4 the element.

1 7. The apparatus of claim 6 wherein said element
2 includes an upper and a lower electrode and a phase change
3 material between said electrodes.

1 8. The apparatus of claim 6 wherein said element has
2 a holding voltage that is at least 80 percent of the
3 threshold voltage of the element.

1 9. The apparatus of claim 6 wherein the phase change
2 memory element has a threshold voltage that varies by less
3 than 10 percent with varying programming currents.

1 10. The apparatus of claim 7 wherein said lower
2 electrode includes titanium silicon nitride or carbon.

1 11. A system comprising:
2 a processor;
3 a wireless interface coupled to said processor;
4 and
5 a phase change memory element that is read with a
6 voltage greater than or equal to the threshold voltage of
7 the element.

1 12. The system of claim 11 wherein said interface
2 includes a dipole antenna.

1 13. The system of claim 11 wherein said element
2 includes an upper and lower electrode and a phase change
3 material between said electrodes.

1 14. The system of claim 13 wherein said lower
2 electrode includes titanium silicon nitride.

3 15. The system of claim 11 wherein said element has a
4 holding voltage that is at least 80 percent of the
5 threshold voltage of the element.

1 16. The system of claim 11 wherein the phase change
2 memory element has a threshold voltage that does not vary
3 by more than 10 percent with programming currents varying
4 by as much as two times.

1 17. A method comprising:
2 reading a phase change memory with a voltage
3 greater than or equal to the threshold voltage of the phase
4 change memory.

1 18. The method of claim 17 including using a memory
2 controller to cause the phase change memory to be read.

1 19. The method of claim 18 including using a memory
2 controller that is a separate integrated circuit from an
3 integrated circuit including said phase change memory.